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GEOGRAPHICAL RECORD

AMERICAN GEOGRAPHICAL SOCIETY

Presentation of the Charles P. Daly Medal to Sir Francis Younghusband. Announcement of the award of the Charles P. Daly Medal of the American Geographical Society to Lieutenant-Colonel Sir Francis Younghusband, President of the Royal Geographical Society, was made in the July number of the *Geographical Review*. The presentation of the medal took place on July 19 at the American Embassy in London.

In presenting the medal the Ambassador referred briefly to the circumstances under which the award was established, to the accomplishments for which it was bestowed, and to the previous holders, making felicitous reference to the merits of the present recipient. In response, Colonel Sir Francis Younghusband expressed his appreciation of the medal, which he likened to the embodiment in gold of the friendly spirit which he met with in his visit to the United States in 1914. The Earl of Winterton, who had been designated by the Secretary of State for India to represent him, then proposed a vote of thanks to the Ambassador, which was seconded by Sir Maurice de Bunsen on behalf of the Council of the Royal Geographical Society.

EUROPE

The Geographical Factor in Spanish Civilization. In a scholarly volume full of new points of view Emilio H. del Villar seeks an explanation of the lowly estate of Spain among the civilized nations of today ("El valor geográfico de España: Ensayo de ecética. Estudio comparativo de las condiciones naturales del país para el desarrollo de la vida humana y la civilizaci6n," Madrid, 1921). Del Villar is not satisfied that it is due to her religion or bad government. When Spain was the greatest country in Europe she was just as catholic and just as monarchial as she is today, and then she easily outclassed the northern nations that now excel her. He thinks it absurd to say the Spaniard is not a worker. He emphasizes the part played by the environment which he calls the "geographic factor."

He devotes half his book to examining this geographic factor at work in the United States—an unusually favorable country for its study; in Europe—the region of fullest knowledge and home of many interesting nations; and in South America—a region of recent development. The other half applies the method of study so formed to Spain.

The eastern central region of the United States has the great population densities and the great city groups, rising to maximum intensity in the belt between Washington and Boston. Agricultural production is high there, but by no means coincident with the densest population. Mining, important as almost nowhere else in the world in many parts of the United States, promotes neither density of population nor the growth of cities. Much of it is carried on in the sparsely settled regions of the West. Iron is enormously abundant, but the ores occur quite apart from the centers of population. The coal beds, also magnificent, are nearer the great centers, but none are within the dense eastern belt. But the manufacture of iron from its ore is carried on near the coal, especially in the dense eastern coast belt.

This amounts to a law or principle. In lands of summer rain and abundant crops the places where minerals are refined and manufactured are the places where the most varied manufactures will be carried on, especially if there is good access to the ocean, the pathway of commerce. Here it is that great population masses and great cities are bound to arise. In Del Villar's phrase this gives high *ecetic* value, conduces to a high degree of habitability.

In Europe are found the same conditions. The great city and population masses there constitute a sub-Nordic zone consisting of the Scotch Lowlands, England, the north of France, Belgium, Holland, western and central Germany, and—in a decreasing degree—Denmark; a summer-rain region like eastern North America, producing abundantly without irrigation, a hay-and-fodder country with many cattle and large cereal and vegetable crops. This zone has much coal and iron also, which it works up on the coal or near by at convenient seaports, developing manufactures of vast importance with raw materials brought from far and near.

Spain has a thinner population and few cities. It lies in an outer, Mediterranean zone. Only the north has summer rain and abundant, moisture-loving growths. The rest of Spain is dry, a land of winter rain and woody thickets, needing the help of irrigation to become productive. Moreover, this scrubland has a very thin soil and has been widely "desertized" both by the removal of the scrub and the exhausting of the thin layer of humus by wheat growing. This condition, widespread in Mediterranean regions, is accompanied and aggravated by destructive hillside erosion which annually invades greater and greater expanses. Del Villar proposes as a remedy less wheat, more fodder, more cattle, more manure—to be applied in connection with chemical fertilizers—to restore the humus. Regions that invite tree crops—almonds, chestnuts, walnuts, and olives—have grown too much wheat, which Spain should have learned long since to seek in the better wheat lands of America.

Obviously it is a difficult thing to change a nation's crops, yet Del Villar must know that the Danes were obliged by American competition to make the same shift from grain to cattle raising and made it successfully. An interesting step in that change of Danish agriculture was the founding of agricultural high schools to enable the people to learn the new business. In this respect the geographical factor was crowding both Spain and Denmark, and the difference in the present prosperity of the two countries seems due to the energetic reaction of the Danes to this crowding and the very slight reaction of the Spaniards. Del Villar is right in drawing attention to the geographic factor, but he seems to minimize the human one. The Spaniard is the most important item in the Spanish environment. Take the case of the olive tree, one of nature's kindest gifts to Spain. According to Theobald Fischer ("Der Ölbaum," Gotha, 1904) the Spanish crop of oil in 1890 was 3,070,000 hectoliters, the Italian 1,300,000, the French 300,000. But the price paid for a hectoliter of Spanish oil was $13; for the Italian, $30; and for the French, $32. "It corresponds to the state of Spanish agriculture and general culture that Spain produces the finest trees and excellent olives but very low-grade olive oil." "The treatment of the tree and fruit and the method of extracting the oil [in Spain] are for the most part so primitive that of late enterprising Frenchmen and Italians go to Andalusia in Spain and have the olives picked and pressed under their own supervision to get really good oil." If the Spaniards could have got the French price for their crop of 3,000,000 hectoliters, they would have added $57,000,000 to its value, more than twice as much as Spain's total expense for education in 1920.

The government does not gather correct statistics, does not accurately inform itself of the facts. It does not help its people adjust themselves to a new condition and leaves 59 per cent of them today illiterate.

Besides not having rain enough for a dense population Spain lacks coal. She has very valuable mineral deposits, especially iron ores, but little coal, producing 4,000,000 tons in 1913 and importing 3,000,000 to make up its consumption of 7,000,000. That is very little indeed compared with the United States or Germany or England. Spanish water power may be equivalent to 20,000,000 tons of coal—estimates differ enormously. The study of the United States and Europe suggests that the mere presence of minerals will not create large population centers. It is the reduction and manufacture of iron and other minerals together with the allied manufacturing that have so much ecetic importance. But Spain is deprived of the favorable effects of the possession of ores by what Del Villar calls the *restrictive action of the optimum.* An optimum is a country of high ecetic value. In Spain's case the optimum is England. It restricted the activities of Spain by purchasing Spanish iron ores and taking them away to smelt and manufacture with the abundant English coal. English capital conducts even the mining operations in Spain, increasing the density of population and making cities grow in England instead of in Spain. In the same way England is enabled to draw from all parts of the British Empire and from other countries as well. We are invited to see the ground of Spain's inferiority in Spain's defective geographic factors.

But if our sense of the Spanish environment as a trying one is heightened we yet are not shown the Spaniard making a very adequate effort to dominate it.

MARK JEFFERSON

Group Cities of Great Britain. The 1921 census of Great Britain shows not only a population of city dwellers but of dwellers in large cities. Over 50 per cent of the population lives in cities or group cities of over 100,000 (the approximate percentage in the United States is 26); over 35 per cent in the great urban aggregates of over 1,000,000. This phase of population distribution is discussed by Mr. C. B. Fawcett in an article "British Conurbations in 1921" in the May number of the (British) *Sociological Review.* The phenomenon of conurbations, or group cities, is of recent origin, an outgrowth of modern industrial life. Conurbations usually arise by the simultaneous expansion of a number of neighboring towns which coalesce into one continuous urban area. A peculiar opportunity for such development in Great Britain is afforded by the unique concentration of population on the coal fields (compare Mark Jefferson: The Distribution of British Cities, and the Empire, *Geogr. Rev.*, Vol. 4, 1917, pp. 387–394). Five of the seven British conurbations of the first magnitude are on the coal fields. The population of these and the smaller group cities has been computed from the census figures for districts officially classed as urban. It is not exact but the best that can be done with available statistics. Continuity of urban occupation is the criterion in determination of the area of the conurbation; but, as Professor Jefferson has pointed out in discussing the same phenomenon in the United States ("Great Cities of the United States, 1920," *Geogr. Rev.*, Vol. 11, 1921, pp. 437–441), difficulties arise in particular cases, and there local knowledge is necessary.

The population of the London conurbation is given as that of the Greater London of the census (the City and the Metropolitan Police Districts). It numbers 7,476,168. Professor Jefferson gives 6,657,447 for the New York group city. The Liverpool conurbation is the urban area occupied by workers of the Port of Liverpool and those dependent on them and subsidiary industries of the port. Its 1,194,780 people are concentrated about the harbor of the Mersey mouth in an unusually compact manner. Manchester, the largest of the coal-field conurbations, occupies the upper basin of the Mersey and numbers 2,351,156, including an inner city, Manchester and Salford, with somewhat less than half the population, and an outer ring. The Birmingham group is comprised by the Black Country: it focusses on this city which numbers about half the group population of 1,707,442. Glasgow includes the greater part of the population of 1,243, 746 constituting the conurbation of the lower Clyde valley. The Tyneside conurbation, with 845,886 people, like that of Liverpool occupies the shores of a single harbor. Newcastle upon Tyne, the largest and most central unit, is its natural focus. The West Yorkshire group (1,380,438) lying on the Pennine foothills of the West Yorkshire coal field is the least compact and least unified of the great conurbations. Leeds is the chief city, but it does not dominate its group as is the case with the chief cities of the other groups. It illustrates well the peculiar social problems before the conurbation, compounded as it commonly is of distinct and independent governmental units which have not realized their community of interests.

Modifications in the Western Boundary of Hungary. According to the Treaty of Trianon, Article 27 (see "The New Boundaries of Hungary," *Geogr. Rev.*, Vol. 10, 1920, pp. 408–412, with insert map scale 1: 1,500,000), the territory known as Burgenland was assigned to Austria because its population is predominantly German. But when the time came to transfer authority from one sovereignty to the other, the Hungarian government, and the local authorities as well, opposed the measure on the ground that the population opposed a change of control and that the region was historically Hungarian. To settle the dispute a conference was held to which Hungary was invited, and there resulted the Protocol of Venice, October, 1921. This document called upon the insurgent bands that had sprung up at many centers to lay down their arms, after which the Austrian government was to take possession. Allied generals were to sit at Sopron and supervise a plebiscite; and both Austria and Hungary pledged themselves to abide by the results. In sympathy with the vote the Conference of Ambassadors assigned to Hungary the town and district of Öedenburg. A further complication has now arisen in the settlement of the Burgenland dispute because the Delimitation Commission, specially appointed by the Peace Conference to establish the Burgenland boundary, has proposed, after a careful study of the whole frontier, that three additional districts should also be given to Hungary as follows: (1) the area around the village of Pamhagen, because it controls a system of irrigation and navigation canals affecting a wide area of Hungary; (2) a group of villages east and southeast of Liebing, because they gravitate around the town of Güns which remains in Hungary; (3) a narrow strip of territory, from 20 to 25 kilometers long, west of the town of Steinamanger, because its economic center is in Hungary. But the Austrian government has objected to these proposed changes in favor of Hungary though it informed the Conference of Ambassadors that it would accept any arrangement that the Council of the League of Nations might make provided that it were made unanimously. The next step will be a study and recommendation by the Council before the Delimitation Commission can continue its work.

The Council of the League has also to consider changes recommended by the boundary commission that is establishing the line between Hungary on the one hand and Rumania and Yugo-Slavia on the other. The commission finds it necessary to depart from the terms of the treaty in some details, a contingency that was foreseen by the treaty makers who provided a means for friendly negotiation. It is only when the recommendations of the Council of the League have been accepted and incorporated by the boundary commissions that the precise limits of Hungary will be known. (For the status of the question as of June, 1922, see *Monthly Summary of the League of Nations*, Vol. 2, No. 6; and for a detailed map of the Burgenland area with boundaries in accordance with the plebiscite held under the terms of the Protocol of Venice, see *Kartographische und Schulgeographische Zeitschrift* Vol. 9 and 10, 1921, p. 136.)

AFRICA

Boundaries of the Spanish Sahara and the Ifni Enclave. The narrow belt of ocean between the Canary Islands and the African mainland is one of the world's rich fishing grounds, though only a small part of the potential wealth is realized today. A fleet operates from the Canaries, and fish are dried and salted on the mainland and carried to market in Teneriffe and Grand Canary. The industry, limited as it is, constitutes Spain's chief modern interest in the Saharan coast where lies her possession of Rio de Oro and the near-by Ifni enclave in French Morocco. Spain's historical claims over these territories go back to the fourteenth century when the Canaries and the adjacent coast across the "Mar Pequeña" were incorporated in the Crown of Castile. The chief subsequent event on the mainland was the erection of the fort of Santa Cruz de Mar Pequeña by Diego de Herrera in 1476. Thereafter interest lapsed. Claims of possession were revived in 1860 when under treaty made with the Sultan of Morocco at Tetuán Spain was granted "in perpetuity sufficient territory for a fishing station on the coast of the ocean by Santa Cruz de Mar Pequeña as she had there of old" (Jerónimo Becker y González: Tratados, convenios y acuerdos referentes á Marruecos y la Guinea Española, Liga Africanista Española, Madrid, 1918). The Shereefian Empire, however, had no control over the tribes and was itself in a precarious political situation, and Spain was unable to take possession. In 1878 a Hispanic-Moroccan commission was appointed to define the territory and began work by instituting a search for the lost site of Santa Cruz de Mar Pequeña (García Pérez: Santa Cruz de Mar Pequeña y Sahara occidental, *Revista Gen. de Marina*, Vol. 45, 1922, pp. 435–455, Madrid). The coast was examined from Agadir to Puerto Cansada near Cape Juby, which latter has been generally identified with Diego de Herrera's fort. The Spanish commissioners, however, favored Ifni; and this point was eventually accepted. The Franco-Spanish conventions of 1904 and 1912 settled the limits of the territory, giving it an area of nearly 1,000 square miles.

The middle of the last century also saw a certain manifestation of Spanish commercial interest on the Saharan territory bordering the coast, and early in 1885 Spain communicated to the powers her intention to establish a protectorate over the region from Cape Blanco to Cape Bogador. The following year by treaty with Arab chiefs (Treaty of Ijil) she acquired a sphere over the western Sahara stated to cover some 270,000 square miles. But here she came into conflict with France pushing northward from the Senegal. The convention of 1900 settled the common boundary of French and Spanish possessions as far north as the latitude of Cape Bogador (26°), curtailing the Spanish claims and awarding to France the valuable salt beds of Ijil. This treaty made provision for free export of native salt, mutual fishing rights in the Cape Blanco peninsula region, and for French right of preëmption over the Spanish possession.

The convention of 1904 defined the sphere of influence from 26° to the parallel 27° 40′ accepted as the southern limit of Morocco, and also a sphere in southern Morocco to and beyond the Draa. The Spanish rights west of the line were confirmed by the convention of 1912 with the exception of the territory beyond the Draa, which was made the southern boundary of Morocco. Spanish Sahara was thus cut off from Ifni. While thus settled in general terms the eastern frontier of Spanish Sahara has never been defined. All this time France had continued her policy of penetration and pacification, her aim being to establish connection between her west and north African domains. As the "corridor" of Rio de

Oro is not available, connection must be made across a stretch of difficult country, the "great desert" between the Adrar section of Mauretania, brought under control in 1913, and Algeria. Conjunction between the camel corps of these two areas has been recently reported ("La liaison de l'Afrique occidentale française avec l'Algerie," *Renseign. Colon.* (*Suppl. à l'Afrique Française*, November, 1921). The several Trans-Saharan railway projects recently brought forward in France include one across Mauretania (Général Calmel: Le Transmauritanien, Paris, 1921) which would call for certain boundary modifications. Meanwhile the Spanish domain has remained practically undeveloped, and authority over the interior is very imperfect. Most of the population is nomadic and moves to and fro across the frontier, and France complains of raids proceeding from Spanish territory. A French view of the situation is presented by Étienne Richet in his book "La Mauritianie" (Paris, 1920) wherein the Spanish colony is described as limited to "a simple fishing station." The Canary islanders have transactions at various points of the coast, but the only Spanish settlement is Villa Cisneros, a "citadel fortress," so little connected with the hinterland that even the water supply is brought monthly from the Canary Islands.

The Population of Southern Rhodesia. It appears certain that the British South Africa Company's rule over Southern Rhodesia must give way to either responsible government or union with South Africa. In view of the pending political change the 1921 census of white population is of special interest (*The African World*, June 24, 1922, p. 327). That the country has not yet emerged from the pioneer stage is shown by the nature of the last decennial increase—42 per cent (as compared with Great Britain 4.7; South Africa 19.2; Canada 20.2, Australia 21.8) of which 17.7 per cent represents natural increase. Yet a trend towards the demographic conditions of a settled population is apparent. Thus, while the percentage of males was 66 in 1911, it is now 56; and, where 64 per cent of the male population of 1911 was between the ages of 20 and 44, it is now 43. The origin of the population is also of interest. In 1911 49 per cent came from Europe, 46 per cent from Africa; in 1921 the respective percentages were 36 and 60.

The total white population of 33,620 (incorrectly given as 36,000 in *The African World*) is, however, very small by the side of the Bantus, estimated to number nearly 800,000. This great native population constitutes one of the serious problems before any new administration ("The Rhodesian Question," *Round Table*, December, 1921). It would prove a heavy burden for a self-governing state and no light matter for the Union of South Africa, which, as the President of the South African Association for the Advancement of Science for 1921 has pointed out, is "a country excelling in sociological problems, racial and interracial, national and international. No other country in the world has so many distinct races and nations settled within its borders, and at such diverse stages of social evolution" (J. E. Duerden: Social Anthropology in South Africa: Problems of Race and Nationality, *South African Journ. of Sci.*, December, 1921). Preliminary figures for the 1921 census place the white population of the Union at about a million and the colored (chiefly Bantu) at nearly five and a half millions.

ASIA

The Agriculture of the Ifugao. In a review of A. L. Kroeber's "Peoples of the Philippines" (*Geogr. Rev.*, Vol. 11, 1921, pp. 462–463) reference was made to the interesting case of the Ifugao of Luzon whose agricultural skill is remarkable among primitive peoples. A detailed account of their agricultural practices in relation to tribal economy has recently been given by R. F. Barton ("Ifugao Economics," *Univ. of California Publs. in Amer. Archaeol. and Ethnol.*, Vol. 15, 1922, pp. 385–446).

The Ifugao dwell in the valleys and pockets of the rugged slopes in the northeastern part of the Cordillera Central. Not only are they separated from centers of civilization by several days' troublesome journey, but even among themselves valley has had little relation with valley save through war and blood feud. Economically they are almost self-sufficient. An analysis of their food sources shows only .024 parts from importation; agriculture provides .84 parts, wild foods .094, and animal culture .042 parts. The food staples are camotes (sweet potatoes) and rice. Camotes require less cultivation, for they do not require irrigation nor do they require a fertile soil. But, though they constitute the larger proportion of the food supply, they are not valued as is rice. His rice crop is the measure of a man's social status in Ifugaoland. It used to form his currency. His religion centers around it. To obtain good weather for crops a great number of feasts are held at which pigs, chickens, and other animals are sacrificed. To provide these furnishes the chief economic motive. The varied and uncertain weather does indeed call for special intervention. Compared with other parts of the islands there is little sunshine. The annual rainfall is heavy, 100 to 125 inches. The rice-growing period here, February to June, is what in most other provinces is the dry season. The nearest approach to a dry season is during March and April when the rice fields sometimes suffer. Rice is grown on the irrigated terraces which sometimes climb the hillsides from elevations of 2,500 to 5,000 feet. The altitudinal range over which rice is grown leads to a certain mobility of labor, the workers moving from lower to successively higher fields for planting and harvest. Retaining walls may be over 20 feet high for fields less than 11 feet wide. Careful spade cultivation and careful selection of seed lead to the production of crops of excellent quality. The rice grains of Ifugao are said to be largest to be found anywhere.

AUSTRALASIA AND OCEANIA

Glacial Erosion in New Zealand. In a recent bulletin of the New Zealand Geological Survey (Geology and Mine Resources of Western Southland ,*Bull. 23*, 1921) an explanation of the great fiords of the southwestern coast of South Island is given by James Park. The mountain belt of South Island consists of uplifted and dislocated fault blocks, the surface of which—a peneplain surmounted by subdued mountains—is much modified by normal and glacial erosion. The fiords are regarded as due to glacial enlargement and deepening along valleys of normal erosion guided by faults. "The rounded and flowing contours of the mountains, the U-shaped valleys, cirques, truncated spurs, hanging valleys, mountain tarns, and rock basins are evidence of intense Pleistocene ice erosion. In the molding and modifying of the land the ice has evidently removed an immense amount of material," yet in the fiords "there is a conspicuous absence of ice-carried débris." Quotation is made from a report by Hector in 1863, showing an early recognition of glacial erosion in this region: "The lateral valleys join the main one at various elevations but are all sharply cut off by the precipitous wall of the [Milford] Sound, the erosion of which was no doubt continued by a great central glacier long after the subordinate and tributary glaciers had ceased to exist." This approaches but does not quite reach the modern understanding of the hanging-valley problem.

Significant details concerning the incomplete glacial erosion of overdeepened troughs in the alpine region of southern New Zealand are given by R. Speight of the Canterbury Museum, Christchurch, N. Z., in an essay on "The Modification of Spur-Ends by Glaciation" (*Trans. and Proc. New Zealand Inst.*, Vol. 53, 1921, pp. 47–53). The preglacial form of the mountains was sub-mature; "valleys had been cut in an elevated area, and a well developed stream-system had been established with long spurs trailing down into the main valleys." As one enters the valleys, the spurs outside of the glaciated area still preserve long trailing forms; a short distance inside the glaciated area the spurs are moderately notched; farther in, the notches increase in depth and divide the spurs into a series of rounded knobs; farther still, the spurs are more or less completely removed, the knobs being greatly scoured away where they still survive and the spur ends being strongly truncated.

W. M. Davis

POLAR REGIONS

An Expedition to Jan Mayen Island. The Island of Jan Mayen, lying between Iceland and Spitsbergen, shares the fate common to remote islands of discovery and rediscovery, legendary and authentic. The first discovery has been attributed to the much-traveled Saint Brendan, a thesis recently supported by Dr. Charcot, of the *Pourquoi Pas*, who visited Jan Mayen in 1902 and 1912 and 1913 ("Au sujet de l'île de Jean Mayen," *Comptes Rendus de l'Acad. des Sci.* [*de Paris*], Vol. 172, 1921, March 14, pp. 669–670). Doubtless the island was known to the early Norse voyagers whether or not it is the "Svalbard" of the Icelandic sagas. Its rediscovery dates to the time when the northern waters acquired importance as a whaling ground in the early seventeenth century. English and Dutch, rivals on the fishing grounds, were rivals for the discovery. Hudson has been accredited, but it appears now that the honor goes to the Dutchman Jan Jacobsz May for his voyage of 1614, though he was close followed by the Englishman Robert Fotherby (1615). While the fisheries maintained their importance Jan Mayen with Spitsbergen was a scene of activity; since then it has been visited by occasional whalers and sealers and, during the last century, has attracted a certain amount of scientific attention. Most observers, however, have spent only a short time on the island; and some parties, indeed, failed to land by reason of the ice or weather conditions along its inhospitable shores. Such was the case with the Stackhouse Expedition of 1911 (*Bull. Amer. Geogr. Soc.*, Vol. 43, 1911, pp. 881–890). Our chief source of information has been the work of the Austrian party that maintained there one of the International Circumpolar stations in 1882–1883.

Last year a successful expedition to Jan Mayen was conducted by Mr. J. L. Chaworth-Musters of Cambridge University. Mr. J. M. Wordie, who accompanied the expedition as geologist, gives an account of its operations in the March number of the *Geographical Journal.* The prime objects were to make natural history collections supplementary to those of the Austrian party and to climb Beerenberg.

Jan Mayen is a volcanic island of comparatively recent origin. The mountains of the southwestern end are moderately subdued. At the northeastern end is the beautiful cone of Beerenberg, with the exception of certain nunataks of Greenland the loftiest mountain within the Arctic. The formation of Beerenberg is among the last events in the physiographic history of the island, though it has not been active in historic time. Ascent of the mountain was accomplished and its height established, by aneroid, as 8,090 feet against the theodolite measurement of 8,350 feet by the Austrian party. The diameter of the crater was estimated at half a mile, and the depth as 500 to 800 feet. On the northern side the crater is breached by a gap through which emerges the Weyprecht glacier in a "series of wonderful falls." The mountain is almost completely covered with snow and ice, and the glacial system is of special interest. A summary statement regarding it is given by Professor Mercanton, the eminent Swiss glaciologist who accompanied the expedition (*Comptes Rendus*, Vol. 174, 1922, June 6, pp. 1479–1481). The entire system appears to be in retreat; icebergs are no longer calved from those glaciers that reach the sea, despite their crevassed fronts; and some lobes no longer reach the sea.

Jan Mayen is of no direct commercial interest today; indirectly, however, it has significance as a weather forecasting station. The importance of the island in this respect was pointed out by the International Aerological Polar Commission meeting at Copenhagen in 1914 and subsequently by the Norwegian Geophysical Commission ("Various Papers on the Projected Co-operation with Roald Amundsen's North Polar Expedition," *Geofysiske Publikationer*, Vol. 1, 1920, No. 4, Christiania). Jan Mayen lies in the Icelandic low at a quarter whence proceed the frequent northwest gales that do much damage to Norwegian coastwise shipping. The Norwegian government decided to support the experiment urged by Norwegian scientists. Mr. Chaworth-Musters' expedition was accommodated on the vessel carrying a party under Engineer Ekerold to erect a wireless weather station. The station, which has now been in operation for nearly a year, has proved a notable success (note on Jan Mayen in *Geographical Journal*, June, 1922, p. 475) and will be continued.

The Vegetation of Western Greenland. A summary of our present knowledge of the vegetation of western Greenland is given by R. E. Holttum in the May number of the (British) *Journal of Ecology.* The strip of ice-free land on the west of Greenland is characterized by an oceanic climate. The mean annual temperature ranges from 1° C. at the southern tip to −8° C. at Upernivik, latitude 73° N., the most northerly Danish colony: July temperatures from 10° C. to 5° C. respectively. Precipitation diminishes northward from 50 inches at the southern extremity to 8 inches at Disko and 9 inches at Upernivik. Summers are cool and damp with sea fog common at sea level, conditions being uniform over a long stretch of coast. The July isotherm of 10° C. is approximately coincident with the northern tree limit; hence tree growth can be looked for only in the extreme south. In Tasermuit Fiord (latitude 60° N.) birches grow to the exceptional height of 20 feet. As far north as the 62nd parallel the climax vegetation appears to be a birch-willow scrub. The birch (*Betula odorata*) is usually very thick but rarely reaches a height of 16 feet; the willow scrub (*Salix glauca*), which occupies the moister and less sunny places, may attain a height of 2½ feet but normally is not half that. Heath and grassland are also extensive.

North of latitude 62° N. heath is the dominant formation. It flourishes to considerable altitudes, on Disko Island, for instance, to above 2,000 feet. It is composed essentially of low woody plants of which the most important are the so-called Arctic heath (*Cassiope tetragona*) and the curlewberry (*Empetrum nigrum*). Where the climatic conditions are less favorable heath gives way to an open formation, the fell-field of isolated stunted flowering plants with mosses and lichens. This is the characteristic vegetation of the nunataks and the extreme north (compare a popular account by W. Elmer Ekblaw: The Plant Life of Northwest Greenland, *Natural History*, Vol. 19, 1919, pp. 272–291, and the appendix on "Flora and Fauna on the North Coast of Greenland" in Rasmussen's "Greenland by the Polar Sea," reviewed in this number of the *Geogr. Rev.*). In favorable sites where there is an adequate snow cover in winter and protection from cold dry winds, as along sides of streams, willow scrub or a herbaceous vegetation may be found. Moss bogs occur on wet undrained soils, and there are special edaphic formations of salt marsh along the shore and a luxuriant vegetation round the settlements ancient and modern.

The Northernmost Mountain Range. A partial report on the Second Thule Expedition of 1916–1918 by Lauge Koch gives a good account of the structure of northwestern Greenland ("Stratigraphy of Northwest Greenland," *Meddel. fra Dansk Geol. Forening*, Vol. 5, 1920, No. 17). It appears that the greater part of the ice-covered area consists, judging by exposures along the coast, of a rather even foundation of crystalline rocks overlaid by ancient horizontal strata; but that the northwest coast, from Cape Morris Jesup to Robeson Channel and across it into Grant and Grinnell Land, has the structure of an ancient mountain system of folded and greatly denuded strata, now cut across by many fiords and thus resolved into as many promontories from 1,000 to 2,000 meters high. It is the northernmost mountain range in the world. Koch associates it with the ancient mountains of Scotland, Norway, and Spitsbergen. W. M. Davis

WORLD AS A WHOLE AND LARGER PARTS

The Mapping of Latin America. At the meeting of the British Association held at Hull early in September Mr. Alan G. Ogilvie read a paper on this subject before Section E (Geography). Mr. Ogilvie exhibited a new map in provisional form on which the present state of cartographic knowledge is represented. This map represents a part of the work carried out by the American Geographical Society in its Hispanic American division. It is hoped that its publication will be a real step in the direction of accuracy of expression. It is exceedingly difficult to determine from internal evidence the reliability of most of the existing maps of Latin American countries, and they are rarely accompanied by adequate indications of the materials from which they are compiled. This index map then, which is largely based on examination of original sources, will form a useful finger post, warning against the too easy acceptance of many maps which do not reveal their chief faults to those who have no means of checking their accuracy.

The process of mapping America south of the Río Grande del Norte has hitherto passed through three phases. The Colonial period from the discovery down almost to the birth of the independent nations was marked by much exploration and approximate mapping of the main features. The second phase corresponds to the explorations of eminent European naturalists led by Alexander von Humboldt whose interests were wide, but with whom the improvement in cartography was but one of their aims. The third phase has been marked by the operations of an ever increasing number of explorers whose main object has been the provision of more accurate maps.

At the present time the most reliable surveys in different regions have been carried out from several different motives. Thus, many long and important traverses and some areal surveys have been made by men—mostly Europeans—with a passion for exploration. The governments of mercantile states, primarily Great Britain and France, have accurately charted the coasts. Boundary disputes involving political and strategic questions have occasioned several of the most extensive and accurate surveys hitherto carried out in South America. But more and more it is the economic development of the continent which calls for accurate mapping, and in the future we may expect that survey by scientific methods will precede not only the building of railroads and opening of mines but the settlement of agricultural and even pastoral land. As boundaries become settled, and causes for war are removed, it will be the economic development of the various countries which will maintain the geodetic and topographic services of states which already possess them, such as Mexico, Argentina, and Chile, and will lead to the creation of such services in the states where they now are absent. Amongst the economic purposes which have already led to the mapping of important areas of Latin America the following may be specially mentioned:

railway surveys, especially in Mexico, Chile, Argentina, and eastern Brazil; in Peru, river surveys with the aim of establishing navigational outlets to the Amazon, and areal surveys of river basins in the Maritime Andes with a view to irrigating parts of the coastal deserts; surveys of possible oil territories in Mexico, Central America, Colombia, Venezuela, Peru, and on the eastern fringe of the Andes in Bolivia and Argentina; while our map knowledge of Central America rests mainly upon the surveys preceding the selection of routes for the interoceanic canal, and for an intercontinental railroad, supplemented by the data of the fruit-growing companies and the route traverses of a few veteran explorers. In Brazil the economic status of the various states is to some extent reflected in the state of their maps—São Paulo alone being largely covered by systematic survey. But the need of communications between the two contrasted divisions of the Republic has led to important explorations about the southern tributaries of the Amazon and their sources.

An interesting—if obvious—fact is revealed by the map referred to at the beginning of this note; namely that nearly all the lands in which areas of any size as opposed to mere routes have been surveyed lie in the unforested regions of South America or in regions of open woodland. The great Amazonian forest is today marked on the map by a relatively small number of known arteries—its rivers; and few of these have yet been surveyed by accurate methods.

The Air Route from Cairo to Baghdad. Extensive use of aircraft in the Near East during the war has been followed by the establishment of a regular air connection between strategic points in this section of the British Empire's most important line of communications, the road to India. The significance of the Cairo-to-Baghdad air service is illustrated in the saving of time on the mails. Ordinarily a letter from London to Baghdad travels via the Suez Canal, the Red Sea, Bombay, Karachi, the Persian Gulf, and Basra—taking between five and six weeks. The establishment of an airplane service between Cairo and Baghdad has reduced this to a minimum time of 9 days.

Two interesting descriptions of the route have recently appeared, "Some Notes on Aeroplanes, with Special Reference to the Air Route from Cairo to Bagdad," by Air-Commodore H. R. M. Brooke-Popham (*Journ. Central Asian Soc.*, Vol. 9, 1922, pp. 127–146, London) and "By Air to Baghdad," by H. T. Montague Bell (*The Near East*, No. 575, Vol. 21, 1922, May 18, pp. 669–674). From Cairo, which seems destined to be one of the world's chief centers of aerial transport, the route proceeds northeast, crossing the Suez Canal at Kantara and passing over Jerusalem and the "inhospitable" Judean hills and the Jordan about its entry into the Dead Sea. Amman, on the Hejaz railway and capital of Trans-Jordania, is an important way station beyond which the route enters on the 500-mile stretch of the Arabian desert. The undulating surface of the desert is over 2,000, in some places over 3,000, feet above sea level and for the first hundred and more miles shows bare lava outcrops alternating with yellow mud flats, "level as a billiard table," covered with water in the rainy season. Traces of an ancient civilization are seen in the lava country. Beyond is a poor steppe country grazed over by nomad Arabs after the rainy season (winter and early spring) and even in summer the theater of occasional raids. Halfway between Amman and Baghdad the two wells known as El Jid form one of the two or three permanent watering places in the desert route.

It was necessary to mark the air route over the comparatively featureless desert country, and this has been accomplished in an ingenious fashion by passing a number of heavy motor lorries over the same track. The track can easily be picked out at elevations of 3,000 to 8,000 feet and need be renewed but once a year. The first half of the course from Amman to El Jid was executed and mapped by Dr. Ball, of the Egyptian Survey; the second half by the Royal Air Force. The marking of the track in June, 1921, was the first known European crossing of this portion of the Arabian desert. Northward lies the well-known caravan route through Damascus (compare Sir Ross Smith's flight over Damascus, in "From London to Australia by Aëroplane," *Natl. Geogr. Mag.*, Vol. 39, 1921, pp. 229–339); but its course is not available to military planes because it crosses into the French sphere.

Meteorological conditions encountered in flying across the desert offer points of interest. The journey east-bound is normally accomplished in less time than west-bound, for at an elevation of 1,000 feet above the surface the westerly wind is apparently permanent. Near the surface sudden changes of wind are characteristic. The worst meteorological trouble seems to be the dust storms, which are not only of frequent occurrence in the warmer months but extend upwards to great elevations — according to Air-Commodore Brooke-

Popham, to heights of 12,000 feet. The formation of dust in the neighborhood of Samara on the Tigris is described in a recent memoir by C. W. B. Normand ("On Dust-Raising Winds," *Memoirs Indian Meteorol. Dept.*, Vol. 22, Part VII, 1921, Calcutta).

HUMAN GEOGRAPHY

The Cold of the Tropics in Relation to Health. The same "passion for simplicity" that fosters the idea of an Arctic climate always and everywhere intensely cold (V. Stefansson: Some Erroneous Ideas of Arctic Geography, *Geogr. Rev.*, Vol. 12, 1922, pp. 264–277) accepts the idea of tropical climate as "unhealthy." This view is challenged by F. L. Hoffman in a short article "Climate and Health in the South American Tropics," in the January number of the *Monthly Weather Review*. Mr. Hoffman, whose statistical work in relation to health and mortality is well known, has recently spent some time in northern South America. He sees no reason "why a so-called tropical climate should be *per se* an unhealthy one. Tropical heat, of course, gives rise to tropical parasitical life with its resulting evil pathogenic effects upon the human organism. But such diseases as result indirectly from tropical heat and moisture can now be effectively guarded against by the intelligent observance of ordinary rules of living." The chief deleterious effect of the climate is cold — the cool, often "distressingly" cool nights. "The chief causes of ill health and premature death in northern South America are not tropical diseases but respiratory and rheumatic affections, which prevail to an enormous extent among the native population. The sensible temperature at night is at times extremely trying and guarded against only by an abundance of covering, which is usually wanting in the case of the native population. Houses are poorly constructed, and the draughts during the night chill the body to a point where disease resistance reaches its lowest ebb. Coughs and colds are of practically universal occurrence, and no precautions are employed on the part of the natives, who are improperly fed, improperly clothed, and improperly housed. The resulting high mortality is not chargeable to the climate, but to apathy and indifference and colossal ignorance."

In Mr. Hoffman's experience the most trying period is between 2 and 3 in the morning when the temperature may be 30° or more lower than in the daytime. Actual instrumental records are scant from the region in question, but such as exist are amply illustrative. For instance at Santo Anato in the Urubamba valley of Peru, a little below 2,000 feet in altitude, in August a daytime maximum of 92° was followed by a minimum of 54° (Isaiah Bowman: The Andes of Southern Peru, p. 178). Other examples are quoted by S. S. Visher in an article "Variability and Uniformity in the Tropics" (*Scientific Monthly*, Vol. 15, 1922, pp. 23–35). On the dry western sides of the Fiji Islands temperatures below 40° have been recorded near latitude 16° close to sea level. Besides the regular and marked cooling of the tropical night the uniformity of tropical temperatures may be broken by irregular "cold spells." A striking illustration is the characteristic occurrence of westerly and northwesterly gales on the Venezuelan coast from December to mid-March which last several days and bring temperatures of 45° or even less (*Meterol. Mag.*, Vol. 56, 1921, p. 42).

Tropical variations in wind, rainfall, and storminess are also discussed by Mr. Visher with the object of correcting a general overemphasis on tropical uniformity arising from conventional statements based on averages.

Aerial Navigation in Its International Aspects. The Convention for the Regulation of Aerial Navigation held at Paris in October, 1919 (*Treaty Series No. 2, Cmd. 1609*, London, 1922) marks a stage in the history of international communications. The convention is adhered to by 27 Powers. Its chief result is provision for the institution of the International Commission for Air Navigation. In addition to its executive function the commission is charged with matters of specific geographical interest; to collect meteorological and other information of interest to international air navigation and to ensure the publication of maps for air navigation in accordance with standard requirements.

The maps embrace two types, general and local, the index scheme being based on that adopted for the international millionth map, and units of measurement, colors, symbols, and arrangements are to conform with the millionth map as far as practicable. The general maps are to be drawn on the Mercator projection and to a scale of 1 degree of longitude equals 3 centimeters. Each will bear the heading "Carte générale aéronautique internationale," a translation of this heading in the language of the country publishing the map, and an appropriate geographical name. It will show at least the following data: principal physical features and geographical names; wirelesss stations; marine lighthouses (height and range at sea level, color and character of the light); national frontiers; prohibited areas; principal air routes; lines of equal magnetic variation; south polar distance; latitude, old and new notation of longitude (see local maps), with an outer margin containing letters and numbers referring to the index of the millionth map; legend of symbols in English or French and in the language of the country publishing the maps; publisher's name and date of publication and of successive editions.

The local maps are to be drawn to a scale of 1:200,000 or, in the case of sparsely inhabited countries, 1:500,000 or 1:1,000,000 as may be appropriate. In addition to the usual notation they will show a new grid reckoning which, with regard to latitude, commences at the South Pole as zero and increases northward by degrees and minutes to 180° at the North Pole and, with regard to longitude, commences with the antimeridian of Greenwich as zero and runs eastward by degrees and minutes to 360°. The local maps are to comprise one degree of latitude and one degree of longitude. The local sheets are to show as far as data are available the following: twenty-minute projection grid; roads divided into two classes according to their relative visibility from the air; railways of all kinds; cities and towns in outline and the plan of the principal public roads crossing them (villages similarly if practicable, otherwise their positions indicated); principal features of the surface water system; woodlands and other areas unsuitable for landing; aerodromes; hangars for airships; plants for balloon inflation; permanent landing places on ground and water; aeronautical ground marks (beacons and fixed navigational lights); marine lighthouses (height, range at sea level, color and character of the light); wireless stations; meteorological stations; overhead electric power lines; remarkable objects; national frontiers; the frontier crossings for customs purposes; prohibited areas; principal air routes; names of important bodies of water; towns and important villages; the topographical relief by shading and figures indicating heights, the most important of which to be surrounded by an oval ring.

As the ordinary topographic mapping is inadequate for aeronautical maps, it is suggested that steps be taken to survey from the air areas along the most important international routes.

Three classes of meteorological information are to be furnished: (1) statistical, to indicate the degree of safety and convenience of routes and aerodromes; (2) current; and (3) forecasts for various periods and for routes. The forms for reports and codes for transmission are given.

GEOGRAPHICAL NEWS

PERSONAL

PROFESSOR ALBERT PERRY BRIGHAM of Colgate University gave a course of lectures on America before the Oxford University School of Geography at its summer meeting. The subjects were: The American Domain, Distribution and Racial Character of the Population, Education, and Social and Political Ideas.

OBITUARY

H. S. H. ALBERT I, PRINCE OF MONACO. Oceanography suffers a loss by the death in Paris on June 26 of the Prince of Monaco. The Prince leaves a permanent memorial in the form of three well-equipped scientific institutions, the Musée Océanographique in Monaco, the Institut Océanographique in Paris, and there also the Institut de Paléontologie Humaine—the last a testimonial to the benefactor's personal interest in prehistoric archeology as well as in all things oceanographical. The museum collections, especially that of the Cetaceae, testify to the Prince's prowess as hunter and naturalist; the exhibits of apparatus, many devised by him, to his practical knowledge as sailor and mechanical engineer; the splendid series of publications emanating from the Press at Monaco, to the wide range of oceanographic interests that he has fostered. The publications render available the results of the many annual cruises of the Prince's yachts, in the northern Atlantic and Mediterranean, and are planned to serve similarly for the work of the recently founded Commission Internationale pour l'Exploration Scientifique de la Mer Méditerranée, of which the Prince was president.

The phase of the Prince's work that has perhaps attracted the widest attention is that on